

C/M WHAT IS CLAIMED IS:

1. A radar gauge adapted to sense fluid level in a tank, comprising:

a radar gauge circuit adapted to receive a transmit frequency and a sample frequency controlling radar transmission and level sampling respectively, the radar gauge circuit generating a level output;

a clock source generating first and second clock frequencies and having a control input setting a first frequency separation between the first and second clock frequencies;

a separation sensing circuit coupled to the clock source and generating an evaluation output as a function of the first frequency separation; and

a controller receiving the evaluation output, the controller having a timer that measures the frequency separation and a control output feeding back to the control input that stabilizes the first separation as a function of timing the evaluation outputs; the controller further having a correction circuit that corrects the level output as a function of the first frequency separation.

2. The radar gauge of Claim 1, further comprising:

a divider circuit dividing the first and second clock frequencies and generating the transmit and the sample frequencies wherein the transmit and sample frequencies are separated from each other by a second

frequency separation; and  
the separation sensing circuit further coupling  
to the divider circuit and generating a  
second evaluation output coupling to the  
controller as a function of the second  
frequency separation.

3. The radar gauge of Claim 2 wherein the separation  
sensing circuit further comprises:

a circuit sensing a polarity of the sample clock  
and generating a further evaluation output  
representative of the polarity.

4. The radar gauge of Claim 1 wherein the clock  
source comprises a voltage controlled oscillator  
controlled by the control output and generating the  
second clock frequency.

5. The radar gauge of Claim 4 wherein the controller  
comprises a digital-to-analog converter generating the  
control output.

6. The radar gauge of Claim 1 wherein the controller  
includes a timer measuring time intervals of an  
evaluation output.

7. The radar gauge of Claim 6 wherein the level  
output includes a current calculated distance that is  
a function of a current timer measurement.

8. The radar gauge of Claim 1 wherein the controller  
includes a timer performing a timer measurement of a  
count an evaluation output during a time interval.

8. The radar gauge of Claim <sup>1</sup>~~8~~ wherein the level output includes a current calculated distance that is a function of a current timer measurement.

<sup>9</sup>~~10~~. The radar gauge of Claim 1 wherein the radar gauge circuit includes a transmit pulse generator and a sample pulse generator controlled respectively by the transmit clock and the sample clock.

<sup>10</sup>~~11~~. The radar gauge of Claim 1 wherein the radar gauge is energized solely by a 4-20 mA analog current and includes a voltage regulator energized by the 4-20 mA analog current.

12. A method of stabilizing clock generation in a radar gauge adapted to sense fluid level in a tank, comprising:

generating first and second clock frequencies separated from each other by a first frequency separation controlled by a control input;

generating a first evaluation output as a function of the first frequency separation;

generating a control output feeding back to the control input that stabilizes the first separation as a function of the evaluation output; and

generating a level output as a function of the stabilized first frequency separation, the level output corrected as a function of the first frequency separation .

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13. The method of Claim 12, further comprising:  
dividing the first and second clock frequencies  
to generate the transmit and sample  
frequencies separated from each other by a  
second frequency separation; and  
generating a second evaluation output as a  
function of the second frequency separation;  
and  
generating the control output as a further  
function of the second evaluation output  
and  
correcting the level output as a function of the  
second evaluation output.

<sup>12</sup>  
~~14~~. The method of Claim ~~12~~<sup>11</sup> further comprising:  
sensing a polarity of the sample clock and  
generating a further evaluation output  
representative of the polarity.

<sup>13</sup>  
~~15~~. The method of Claim ~~12~~<sup>11</sup> further comprising:  
generating the second clock frequency in a  
voltage controlled oscillator wherein an  
oscillator control voltage is controlled by  
the control output.

<sup>14</sup>  
~~16~~. The method of Claim ~~15~~<sup>13</sup> further comprising:  
generating the oscillator control voltage in a  
digital-to-analog converter.

17. A computer-readable medium having stored thereon  
a plurality of sequences of instructions for execution  
by a processor in a radar gauge adapted to sense fluid  
level in a tank, the radar gauge adapted to transmit

and receive radar transmissions, the plurality of sequences of instructions including sequences, when executed, that cause the processor to perform the sequence:

receiving a first evaluation output representing a first frequency difference between first and second clock frequencies generated by a clock source having a control input;

receiving a second evaluation output representing a second frequency difference between transmit and sample frequencies generated by dividing the first and second frequencies respectively; and

generating a control output feeding back to the control input that stabilizes the first separation as a function of the first and second evaluation outputs.

18. The computer readable medium of Claim 17 wherein the sequence of instructions further comprises:

sensing a polarity of the sample clock and generating a further evaluation output representative of the polarity.

19. A radar gauge adapted to sense fluid level in a tank, comprising:

means for receiving a transmit frequency and a sample frequency controlling radar transmission and level sampling respectively, and for generating a level output;

means for generating first and second clock frequencies separated from each other by a

first frequency separation, the clock source having a control input setting the first separation;

means for dividing the first and second clock frequencies and for generating the transmit and sample clock frequencies separated from each other by a second frequency separation;

means for sensing the first and second frequency separations and generating evaluation outputs as functions of the first and second frequency separations; and

means for controlling a control output feeding back to the control input, stabilizing the first separation as a function of the evaluation outputs.

- <sup>16</sup>  
~~20~~. The radar gauge of Claim <sup>15</sup>~~18~~, further comprising:  
means for sensing a polarity of the sample clock and generating a further evaluation output representative of the polarity.